

PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing
(day/month/year)

Applicant's or agent's file reference

030943PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2005/000119

International filing date (day/month/year)

07.01.2005

Priority date (day/month/year)

09.01.2004

International Patent Classification (IPC) or both national classification and IPC

Applicant

NIPPON PISTON RING CO., LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE
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International application No.

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Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. V	Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	1 - 12	YES
	Claims		NO
Inventive step (IS)	Claims	5, 6	YES
	Claims	1-4, 7-12	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO
2. Citations and explanations:			
<p>Document 1: JP 11-230344 A (Toyota Motor Corporation), 27 August 1999</p> <p>Document 2: JP 8-296497 A (Hitachi Metals Ltd), 12 November 1996</p> <p>Document 3: Microfilm of the specification and drawings annexed to the written application of Japanese Utility Model Application No. 8937/1984 (Laid-Open Utility Model No. 122554/1985), (Kawasaki Heavy Industries Ltd), 19 August 1985</p> <p>Claims 1-4, 7, and 8</p> <p>Document 1 discloses a wire material for a coil expander with a rectangular cross-sectional shape and flat sides, wherein a combined piston ring coil expander is used which has a piston ring and a coil expander for press-biasing the piston ring in a direction outward from the diameter (see, for example, paragraph 0019 and Fig. 2).</p> <p>Document 2 discloses a wire material for a piston ring, constituted such that, when forming the piston ring, the surface of the wire material for the piston ring, which is the outer circumferential surface of the piston ring, is formed into a convex curved surface shape, and the surface of the piston ring which is the inner circumferential surface is formed into a concave curved surface (see, for example, paragraph 0005 and Fig. 10).</p> <p>The height of the convex curved surface is a matter of design which a person skilled in the art can appropriately select in order to obtain the coil expander of the desired shape, and selecting the outer circumferential surface as the plastic working surface, or in other words, the surface which is not ground or cut, etc., is similarly a matter of design appropriately done by a person skilled in the art.</p> <p>Moreover, using an oil ring as the piston ring which the coil expander biases is matter which can be appropriately selected by a person skilled in the art.</p> <p>Accordingly, a person skilled in the art could easily conceive of using the constitution described in document 2 for the wire material for a coil expander described in document 1 to achieve the inventions of claims 1-4, 7, or 8, and therefore does not appear to involve an inventive step.</p> <p>Claims 9-12</p> <p>Document 3 discloses a constitution for forming the wire material for the coil expander from a shape memory alloy (see, for example, page 3, line 18 to page 4, line 8 and Fig. 2).</p> <p>Accordingly, the inventions of claims 9-12 could easily be conceived of by a person skilled in the art based on the inventions described in documents 1-3, and therefore do</p>			

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

not appear to involve an inventive step.

Claims 5 and 6

The inventions of claims 5 and 6 are neither described in any of the documents cited in the ISR, nor are they obvious to a person skilled in the art.

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Basis of this opinion

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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-12	YES
	Claims		NO
Inventive step (IS)	Claims	5, 6	YES
	Claims	1-4, 7-12	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO

2. Citations and explanations:

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Claims 1-4, 7, and 8

Document 1 discloses a wire material for a coil expander with a rectangular cross-sectional shape and flat sides, wherein a combined piston ring coil expander is used which has a piston ring and a coil expander for press-biasing the piston ring in a direction outward from the diameter (see, for example, paragraph 0019 and Fig. 2).

Document 2 discloses a wire material for a piston ring, constituted such that, when forming the piston ring, the surface of the wire material for the piston ring, which is the outer circumferential surface of the piston ring, is formed into a convex curved surface shape, and the surface of the piston ring which is the inner circumferential surface is formed into a concave curved surface (see, for example, paragraph 0005 and Fig. 10).

The height of the convex curved surface is a matter of design which a person skilled in the art can appropriately select in order to obtain the coil expander of the desired shape, and selecting the outer circumferential surface as the plastic working surface, or in other words, the surface which is not ground or cut, etc., is similarly a matter of design appropriately done by a person skilled in the art.

Moreover, using an oil ring as the piston ring which the coil expander biases is matter which can be appropriately selected by a person skilled in the art.

Accordingly, a person skilled in the art could easily conceive of using the constitution described in document 2 for the wire material for a coil expander described in document 1 to achieve the inventions of claims 1-4, 7, or 8, and therefore does not appear to involve an inventive step.

Claims 9-12

Document 3 discloses a constitution for forming the wire material for the coil expander from a shape memory alloy (see, for example, page 3, line 18 to page 4, line 8 and Fig. 2).

Accordingly, the inventions of claims 9-12 could easily be conceived of by a person skilled in the art based on the inventions described in documents 1-3, and therefore do

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